

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

C. Amendments to the Claims.

1. (Currently Amended) A method of forming a plurality of semiconductor device layers, comprising the steps of:

- 5 forming an oxide layer on an exposed surface of an insulating layer by reacting hydrogen with and oxygen on the exposed surface of the insulating layer deposited over a wafer; and
- forming a conductive gate layer over the oxide layer.

10 2. (Currently Amended) The method of claim 1, wherein:

 the reacting of hydrogen with and oxygen is performed at a wafer temperature in the range of about 800°C to 1300°C.

15 3. (Original) The method of claim 1, wherein:

 the oxide layer has a thickness in the range of 20-60 angstroms.

4. (Currently Amended) The method of claim 1, wherein:

 the reacting of hydrogen with and oxygen on the wafer surface has a duration in the range of 30 seconds to 2 minutes.

20 5. (Currently Amended) The method of claim 4, wherein:

 the reacting of hydrogen with and oxygen on the wafer surface has a duration in the range of approximately 1 minute.

25 6. (Original) The method of claim 1, wherein:

 the conductive gate material includes polysilicon.

7. (Original) The method of claim 1, wherein:

 the oxide layer and conductive gate layer form a SONOS-type device.

8. (Original) The method of claim 1 wherein steps prior to forming the oxide layer comprise:

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forming a tunnel dielectric; and
depositing the insulating layer, the insulating layer being a charge storing
dielectric layer.

5 9. (Original) The method of claim 8, wherein:

the charge storing dielectric layer includes silicon nitride.

10. (Original) The method of claim 1, further including:

forming a gate etch mask; and

etching to form gate stacks; and

10 forming insulating sidewalls on the gate stacks.

11. (Original) The method of claim 8, wherein:

forming the tunnel dielectric, forming the charge storing dielectric layer,
and forming the oxide layer occur in a single wafer processing tool.

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12. (Original) A method, comprising the steps of:

forming a bottom dielectric on a substrate surface;

forming a middle dielectric over the bottom dielectric; and

20 forming a top dielectric over the middle dielectric by heating the substrate
to less than about 1200°C for less than two minutes.

13. (Currently Amended) The method of claim 12, wherein:

forming the top dielectric further includes reacting the surface of the
middle dielectric layer with hydrogen (H₂) and oxygen (O₂).

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14. (Original) The method of claim 12, wherein:

the middle dielectric comprises at least one layer selected from the group
consisting of silicon nitride, silicon oxynitride, and silicon rich silicon nitride.

30 15. (Original) The method of claim 12, wherein:

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the bottom dielectric has a thickness of less than 15 angstroms; and
the top dielectric has a thickness of less than 50 angstroms.

16. (Original) A method of manufacturing a SONOS-type device, comprising the steps of:
oxidizing a charge storing dielectric comprising at least one layer that
includes silicon and nitrogen by reacting hydrogen with and oxygen to form a top
oxide layer over the charge storing dielectric.

17. (Original) The method of claim 16, wherein:
the oxidizing lasts for less than two minutes.

18. (Original) The method of claim 16, wherein:
the oxidizing occurs at a temperature of less than 1200°C.

19. (Original) The method of claim 16, further including:
a tunnel dielectric formed below the charge storing dielectric;
forming a conductive gate layer over the top oxide layer; and
patterning at least the top oxide and charge storing dielectric to form a gate
stack.

20. (Original) The method of claim 16, wherein:
the top dielectric has a thickness greater than 20 angstroms.